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METOC Human-System Interaction Improvement

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LONG-TERM GOAL

Contribute to the understanding and improvement of the information flow from METOC system to the forecasters and to the warfighters. Of particular interest is the METOC information flow in the STRIKE warfare area.

OBJECTIVES

Develop a prototype information interaction system to create a more efficient system for METOC personnel to present concise tactical weather information to the warfighters. Exploit new cognitive research ideas for the purpose of improving the METOC human-system information flow to the warfighters.

APPROACH

Use iterative development to achieve a prototype system that will improve the process of forecasting for tactical operations. The successive builds will be refined each time through testing. In order to describe the path of the "effective" METOC information flow, initially, we are concentrating on the STRIKE WARFARE scenario. Develop TAMS/RT visualization product for the STRIKE warfare folders; test the usefulness of the product with the users. The development of these visualization products depends on understanding not only the METOC forecasting and warfighter needs, but also understanding the cognitive processes involved in forecasting and the role of visualizations in these cognitive processes.

WORK COMPLETED

Conducted workflow experiment design meeting (May 19-20, 1999). Carried out the workflow experiment at NPMOF San Diego (July 26-30, 1999). Developed an observational methodology that was tested in a series of five separate experiments at the Naval Pacific Meteorological and Oceanographic Facility (NPMOF), San Diego. The methodology used included hand written notes, computer generated notes with specific categories of task versus time, videotaping, focus group sessions, and electronic copies of "chat" sessions and of presentations. In addition, "ground truth" data were collected at strike location (NPMOD Whidbey Island) to "verify" the forecast. The methodology was developed to help identify METOC data, information, processes, tasks, and the utilization of visualization by METOC forecasters to support air strike.

RESULTS

The designed observation methodology was applied to a series of experiments where teams of forecasters, working in a simulated carrier METOC office (CV-METOC), attempted to provide a METOC briefing package for pre-strike mission planning session. Videotapes, hand-written notes, and real-time task recording programs were all successfully implemented in this experiment. The results showed that the observation methodology was proven successful and validated.

STRIKE scenarios in the experiments had few mesoscale requirements. When there was a need for mesoscale information, forecasters did use the TAMS/RT product. However, the usage was still synoptic in nature (e.g. examining the 200mb chart). For future experiments, the STRIKE scenario will be concentrated on the mesoscale details to force the forecasters to seek mesoscale information.

Forecasters spent a lot time on "instrumentation" tasks (from 25% of time to 60% in one case). The instrumentation time means that they are spending their time on working with file or windows manipulations, not on their assigned task. The 25% is "normal", but 60% is very high. This figure gives the indication that a cognitive system can bring improvement to the METOC information flow.

IMPACT/APPLICATION

The observation methodology used in this year's project was very successful and will be used in the future experiments. One of the observations in our experiment is that METOC forecasters receive very few customer feedbacks. In the future experiments, we will have to reach the users directly to include their feedbacks in our observation methodology. Another issue that was brought out by the experiment was the METOC personnel training. One of the observations was that some of the METOC forecasters did not fully utilize what TAMS/RT can provide.

TRANSITIONS

None

RELATED PROJECTS

The TAMS/RT Project (N0001499WX30120) is closely related to this project. All visualization products to be tested will be produced from the TAMS/RT visualization suite. The eventual METOC tactical information product to be placed in the tactical folders will be integrated in the TAMS/RT product suite as well.

REFERENCES

None.

PUBLICATIONS

None.